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Blizzard and Cold Weather Tips

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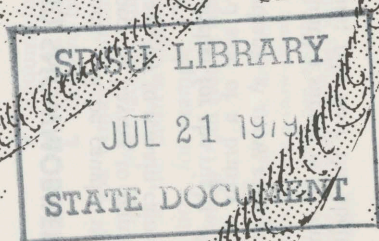
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BLIZZARD and COLD WEATHER TIPS



COOPERATIVE EXTENSION SERVICE
SOUTH DAKOTA STATE UNIVERSITY
U.S. DEPARTMENT OF AGRICULTURE

BLIZZARD and COLD WEATHER TIPS

by WILLIAM H. PETERSON, extension
agricultural engineer,

A search of South Dakota historical records on blizzards indicates that blizzards can, and have, occurred in this state from the middle of October until early May. The first blizzard recorded also holds the record for happening the latest in the season.

John J. Audubon, noted naturalist who was traveling through what is now South Dakota, noted in his writings that on May 5, 1843, thousands of new-born buffalo calves froze to death during a blizzard that arrived on that date. After the storm there were two feet of snow on level ground. Buffalo are hardy animals, so this must have been quite a storm.

Other notable blizzards occurred on December 11, 1850; November 19 and 20, 1886; and April 13, 1873. During the latter storm General and Mrs. George Custer and approximately 900 men of the famous 7th Cavalry Regiment arrived in Yankton with their mounts and pack mules. They survived the storm with much discomfort.

October 15, 1880 dated a blizzard of re-occurring storms and deep snow. When the snow melted in the spring, extensive flooding occurred, especially in the southeast portion of the state.

The January 12, 1888 blizzard roared in from the north-west with little warning. Early morning was mild and gave no hint of what was to follow. There were 174 human deaths in South Dakota as a result of this storm. All known deaths occurred east of the Missouri River, probably because the western half of the state was not settled yet.

Notable blizzards also occurred in mid-May 1905; November 11 and 12, 1919; late-December and early-January 1935-36; and January 3, 1949 (this storm actually lasted for several weeks). December 6, 1951 marked the beginning of several weeks of intermittent blizzards which continued until the middle of March 1952. March 2, 3 and 4, 1966 produced the most destructive blizzard in South Dakota in terms of livestock losses. The storm piled snow drifts up to 35 feet. Winds blew 60-70 mph with gusts up to 100 mph in several north-central counties. Livestock losses during the storm and later as a result of exposure, starvation, and dehydration were estimated to approach 95,000 head of cattle, sheep, and hogs. Human deaths were held to a minimum, but the "killer storm" will long be remembered in South Dakota as a catastrophe for stockmen.

WINTER STORM WARNINGS

All radio and television stations issue severe weather warnings in addition to regular weather information. This information is obtained from the U. S. Weather Bureau station in the vicinity of the broadcasting station. Severe winter weather warnings particularly are important in South Dakota where

humans and livestock are frequently in danger from blizzards and extreme cold weather. The public should regard extreme cold weather and blizzard warnings as "Red Flag Alerts." During these periods broadcasting stations frequently issue weather bulletins every hour or so.

Blizzard warnings are issued when winds with speeds of at least 35 mph are accompanied by considerable falling and/or blowing snow, and temperatures of 20° F. or lower are expected to prevail for an extended period. Visibility of 500 feet or less can be expected under these weather conditions.

Severe blizzard warnings are issued when winds of 45 mph or more are expected with a great deal of falling and/or blowing snow, temperatures of 10° F. or lower, and visibility near zero.

WIND-CHILL FACTOR

Strong winds accompanied by low temperatures cause rapid cooling of exposed surfaces of bodies of both human beings and livestock. A strong wind combined with a temperature slightly below freezing can have the same effect as a temperature nearly 50 degrees lower. A strong wind can make any temperature more chilling because of the wind-chill factor.

Anyone who is outdoors during low temperature and strong winds will find that he becomes exhausted easily and is more subject to frost bite or even death. Stockmen likewise should consider the effect of the wind-chill factor on unprotected livestock during low temperatures and strong winds.

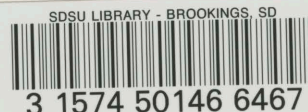
WIND CHILL FACTOR COMPARISONS

Temperature	Wind Velocity			
	Calm	15 m.p.h.	30 m.p.h.	40 m.p.h.*
30	30	11	-2	-4
20	20	-6	-18	-22
10	10	-18	-33	-36
0	0	-33	-49	-54
-10	-10	-45	-63	-69
-20	-20	-60	-78	-87
-30	-30	-70	-94	-101
-40	-40	-85	-109	-116

*Winds speeds greater than 40 m.p.h. have little additional chilling effect.

LOCALIZED BLIZZARDS

A localized blizzard frequently can occur within a few square miles not covered by a blizzard warning. Stockmen and travelers—pay close attention to weather warnings, and be prepared to encounter potentially dangerous local weather conditions!



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HOME PREPARATIONS FOR BLIZZARDS

Listen for weather bureau warnings over radio and television. Forecasts are issued regularly four times per day and revised as necessary.

Since sleet storms often precede a blizzard, provide for a battery-powered radio and heat source that does not depend on electric power. The most satisfactory solution to electrical outage is a standby generator of adequate capacity. Information on how to select and use a stand-by generator is in Leaflet 480, "Stand-by Electric Power Equipment for the Farm," available from county extension offices and the Bulletin Room, South Dakota State University, Brookings.¹

An old cook stove and supply of fuel can do the job of providing heat. Do not use a charcoal broiler inside—the fumes are poisonous. Some camp stoves also are hazardous, so check the instructions first. A supply of candles and matches can provide light and can even be used to heat food. Kerosene lamps and lanterns are suitable and inexpensive.

If your home is without heat, gather everyone in the smallest room—they will heat it to some extent. Use blankets and bedding to keep warm. A tornado-fallout shelter could be used if it is connected to the house.

Keep one to two week's supplies of any special medicines (insulin, heart medication, etc.) and food such as canned goods, dried milk, etc. These can be used periodically and replenished with fresh stock. Keep a two-week supply of fuel.

If your water supply depends on electricity, as a precaution draw a tub-full of water while the blizzard approaches. The home water heater and toilet tank contain drinkable water. If there is no heat, drain water pipes before they freeze. **Do not waste water.**

Keep a ball of binder or baler twine in the house to use to avoid getting lost if it is necessary to leave the house to check on elderly neighbors, livestock, etc. All sense of direction is lost easily in high winds and blowing snow. Keep shovels in the house—if outside they may be covered by snow.

Do not let children go out alone to play. If they do go out, be sure an adult is with them.

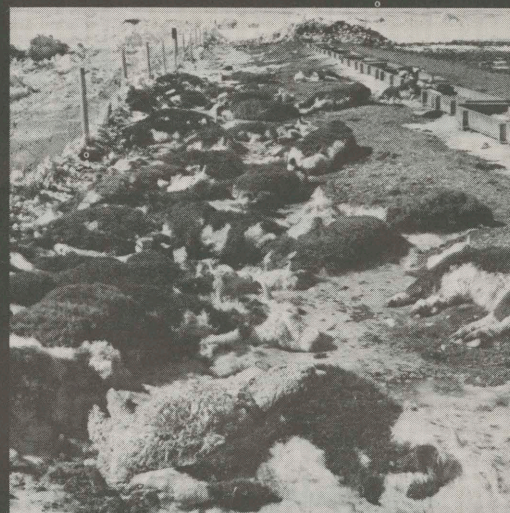
Keep calm—anxiety is tiring. Follow normal family activities as much as possible. Games, homework, and assisting with meal preparation can help children pass the time. If someone is lost in the storm, do what you can, but don't add to the tragedy.

If you are isolated after the blizzard and need help, use the standard emergency distress signals for aircraft. Make these signals on the ground, in a location visible from the air, with letters at least 10 feet tall; use black cloth, hay, boards, logs, or whatever you have on hand that will be most visible. If nothing is available, tramp letters into the snow making as much shadow as possible. Some of the standard distress signals are these:

- I Require doctor.
- II Require medical supplies
- F Require food and water.
- L Require fuel

If you cannot remember any of these signals, use the standard international distress signal, SOS. Attract attention to the distress signals by building a smoky fire—from old tires, for example. The pilot will acknowledge by rocking wings from side to side.

¹There has been difficulty with operation of a generator by a diesel tractor during a snow-storm; snow clogged the air intake, oil was drawn out of the crankcase, and the engine was ruined. Operation of the tractor inside a closed building, with exhaust piped out, would prevent this problem.



They died from suffocation and exposure. Proper shelter would have saved them.

PROTECTION FOR LIVESTOCK AND FARMSTEADS

Shelter is of primary importance for livestock during a severe blizzard because of the wind-chill factor and contributing causes such as snow and ice covering eyes and nostrils. Cattle running in brushy country or lowlands with timber usually survive all right if feed, water, and salt are available. The following provide much protection for livestock during a blizzard:

- A well-built shed with tight-fitting sides on the north and west and a well-supported roof; it can be open on the south if it is 32 feet in depth.
- A closely-planted windbreak on the north and west of the feedlot, back from the feedlot 150 feet or more; farmstead windbreaks or feedlot windbreaks should include 8 or more rows of trees with at least 2 rows of conifers (evergreens) on the windward side of the windbreak. A snow trap composed of one or two rows of shrubs or conifers on the north and west of the main windbreak provide additional protection. Two rows of conifers on the south and east of the farmstead or feedlot also can be helpful.
- Provide for feed to be available during and after the storm. It does little good to have hay in stacks too far from livestock or so deeply covered with snow as to be inaccessible. Concentrates in the form of pellets or cakes are excellent for providing emergency rations.
- Water is important for livestock during and after a blizzard, since they dehydrate or dry out without water. A tank heater will pay for itself many times. Cattle will not eat enough snow to take care of their requirements.
- After a blizzard of several days duration, cattle that have been without salt frequently suffer from salt starvation. Take care, however, that livestock do not get too much salt during the recovery period.

MACHINERY

A tractor frequently is the only type of wheel vehicle that can be operated during and after a blizzard. A tractor that is winterized, equipped with a hydraulic stacker, and kept in a shed, ready to go can be invaluable for taking care of livestock and performing other emergency missions. Back the tractor



A properly planted farmstead windbreak does a good job of keeping snow away from farm buildings.



Expect bad roads, and never trust your CB so much that you forget other precautions.

into shed to eliminate much snow shoveling for turn-around space.

WINTER CLOTHING

If it is necessary to walk for help or check on livestock after a blizzard, be sure to dress warmly, particularly if it is below zero or windy. Each one mph of wind speed increases cooling effect by as much as one or two degrees colder temperature. Chances are you will be far from help and on your own.

Loose-fitting, light-weight clothing in several layers provides the greatest warmth. Remove layers as necessary to prevent perspiring. A light cotton work shirt under a wool shirt makes it more comfortable and adds warmth. For protection from wind and snow, outer garments should be tightly woven and water repellent. Be sure layers overlap at the waist. Use a hood or mask that will cover most of the face and allow breathing of warm air; this will protect lungs from cold air.

Medium-weight, long underwear—part cotton and part wool—is preferred. Two or three pairs of light socks are better than one thick pair. Wear cotton next to the skin, then light wool. Do not overload boots with socks—circulation is impaired if they fit too tightly.

Water-repellent wool, gaberdine, or poplin trousers are best. Avoid heavy trousers—use more underwear, instead. Hard-finished fabric prevents snow from sticking. Water-repellent boots are good—soles should be limber enough for some flexing.

Wear caps of water-repellent cloth with wool lining and long, tie-down earflaps; knitted wool caps will collect snow. Mittens keep hands warmer than gloves, and mittens with woolen liners are best. Long gauntlets or snug-fitting wrist bands are needed, too.

TRAVELING

Avoid traveling in severe weather. Keep a philosophical attitude—if you can't get to a meeting, chances are others won't get there either. Your family will feel better if you stop, call them, and tell them you are safe and "staying put."

If you do travel, be sure someone knows you are coming and when to expect you. Allow extra time, and use extra caution. Drive more slowly. Listen to weather reports on the radio. Keep your gasoline tank at least half full.

Be sure your car is in good condition—battery and ignition, radiator, winter engine oil, lights, wipers, defrosters, brakes tires. Muffler and exhaust system need to be tight to avoid

carbon monoxide poisoning if you are stalled and must stay in the car.

Take along these supplies and emergency equipment:

- **Tire chains** provide better traction than the best snow treads; strap-on chains are easier to put on than conventional chains.
- **A small sack of sand** can be useful in getting out of slippery spots.
- **Extra clothing**—overshoes, parka coat, heavy cap with earlaps, warm mittens—and **blankets or a sleeping bag** are easy to carry along.
- **A can of candles and matches** may be useful for melting snow for drinking water. Another can could serve as a toilet.
- **A good flashlight or signal light** for signaling if stalled at night or investigating trouble if car lights go out.
- **High-energy food** such as candy, dried foods, etc.

Don't panic if you become stalled. Work slowly and avoid over-exertion—more people probably die from over-exhaustion than from freezing. Stay with the car—it is seen more easily than a person and provides much protection. Run the car engine and heater sparingly, and be sure exhaust can get away from under the car. Make sure someone stays awake.

Do not consume alcoholic drinks; this causes dilation of skin blood vessels and loss of body heat. Smoking will reduce temperature of hands and feet.

After snow stops blowing, make a distress signal for search planes—an SOS in the snow from dark clothing, boards, or logs, or tramp out the letters at least ten feet high. The spare tire can be burned for a smoky, attention-getting signal, but you will need a hot fire to ignite it. Let the air out of the tire first. Engine oil, burned in a hub cap, makes a smoky fire.

HINTS FOR SPORTSMEN AND SNOWMOBILERS

Occasionally hunters or sportsmen will be caught in a severe winter storm with the prospect of having to remain out overnight or longer. In such a case, try to remain calm—do not become panic stricken.

First priority is the selection of shelter for the night. An acceptable shelter is on the leeward side of a brushy area or away from the wind next to a cutbank. A snow cave provides good protection.

While it is daylight gather fuel until a supply is accumulated that will last for several hours; pile near the shelter

area. Make an all-out effort to gather enough fuel to last throughout the night. Start a fairly small fire (no hunter or sportsman should be without a supply of matches in a waterproof container or a filled cigarette lighter with new flint.) Build the fire a foot or two from the cutbank wall or a log to form a reflector for the heat. If available, rocks can be heated in the fire and will continue to radiate heat and provide additional warmth for some time after being removed from the fire.

When daylight comes, increase the fire to produce as much smoke as possible to serve as a signal to rescue parties. Do not leave shelter and a fire unless you positively know the country and have a good sense of walking out safely.

If no shelter is available and a fire cannot be built and maintained, burrow a hole in a snowbank and crawl into the hole; wild creatures use this method of survival during a blizzard, and it has been used on occasion by sportsmen.

COMMUNITY PREPARATION FOR A BLIZZARD COMMUNICATION

Since sleet storms can put a regular telephone line out of order, other means of communication should be available.

Civil Defense radio networks can link together fire, law enforcement, operating county and city departments, and school buses. Each county should have an emergency operating center with radio and telephone communications. It is better to have the center in a room separate from regular departments such as fire and police. Provide a reception area for visitors in order to avoid interference with workers.

Citizens' band radios, used by ranchers and businesses in some areas, can be used to relay messages. Amateur (ham) radio operators can help, too. Many businesses also use two-way radios. Rely on law-enforcement radio systems only for messages of extreme urgency. Plan beforehand how communications systems are to operate; elected officials have this responsibility.

TRANSPORTATION

People get sick, accidents happen, and babies are born regardless of blizzards. These emergencies require transportation. Keep a list of equipment available locally—four-wheel drive vehicles, snowmobiles, etc.—in the emergency operating center along with location and from whom to request help; this information should be available immediately when an emergency arises.

List snow removal equipment—bulldozers, front-end loaders, etc.—with location and persons to contact. County snow-removal funds should be accumulated and kept adequate for any emergency situation. Establish succession of authority so that emergency operations can proceed even though those with direct authority may be isolated.

A CB radio in your car **could** help you if you are stalled. But you may be out of range of other CB operators. You should not skip any of the other precautions just because you have a CB. After all, somebody will make an effort to come out and get you, and it just may not be possible and he may endanger his own life to do it. You can very likely pull through on your own until help arrives after the blizzard if you have prepared well and keep calm.

OUTSIDE HELP

Once state roads are cleared, state snow-removal equipment may work on rural roads if authorized. Some equipment, however, cannot be used on all roads and bridges.

National Guard equipment can be used as authorized, depending on what equipment is available in the locality.

"Plan Bulldozer" is an agreement between state civil defense and private contractors under which contractors bring in equipment to clear roads. They work on contract with local governments and are paid out of local snow-removal funds.

The Civil Air Patrol will fly air-search and rescue missions as requested by local authorities.

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